

STATE OF IOWA WALLACE BLDG. EVALUATION

SECTION 01010

SUMMARY OF THE WORK

1.0 PART 1 - GENERAL

1.1 GENERAL BUILDING INFORMATION

- A. Project Overview: **Wallace Building Evaluation**
- B. Building Occupancy Type: **General Office Space, Assembly (Auditorium on second level and Conference Rooms on all levels)**
- C. Construction Type of Building: **Type I-A**
- D. Fire Suppression System: **Building is protected by a fire suppression system throughout (except in mechanical spaces)**
- E. Height and Number of Stories of Building: **Five Stories (at 14' each) = 70', + 14' for Penthouse**
- F. Changes Made to Floor Area and/or Occupant Loads: **in DCI and AG Lab areas, space to be converted to offices - primarily open office space for cubicles. For HVAC calculations, 150 square feet/person has been assumed.**

1.2 GENERAL PROVISIONS

- A. The conditions of the Construction Contract shall apply to the Work specified in this Section.
- B. Contractor shall construct the specified Work strictly in accordance with the express requirements and the reasonable implications of the Contract Documents and to Owner's reasonable satisfaction.
- C. Furnish labor, equipment and materials necessary to complete the Work specified herein under the "Description of Work" portion of this document and also as shown on the drawings included in this package.
- D. The word "Provide" shall mean "furnish and install".
- E. Contractors shall prepare and maintain accurate redlined as-built drawings, including all the changes made during the progress of this project. At the completion of the work, the Contractor shall submit redlined as-builts to the Owner's Designated Representative.
- F. Any asbestos removal required shall be by Asbestos Contractor (refer to Specification 00812).
- G. Field modifications are not permitted without prior notification and written approval of the Owner's Designated Representative.

- H. Cutting, patching or core drilling incidental to this Work shall be done by the specified Contractor as stated herein.
- I. Construction/Equipment Staging Area for the project shall be agreed upon by the Owner's Designated Representative.
- J. Contractor shall make a reasonable effort to prevent construction debris, noise, fumes, etc. from migrating to adjacent occupied work areas and leave work area clean. Where deemed necessary, temporary walls and/or screens shall be installed to assure this.

1.3 CLASSIFICATION OF BIDS

- A. A single combined Lump Sum (Firm Price) Bid Proposal for the entire project will be received by Owner. The Lump Sum Proposal shall be for General Construction, Mechanical Work, Fire Protection Work and Electrical Work as defined in Division 1 through Division 16 of this Specification.
 - 1. A segregation of the Lump Sum Proposal on the Bid Form shall be provided to Owner for information purposes only and will not be used to negotiate multiple contracts. Segregation shall consist of the following:
 - a. General Construction Work - Division 0 through Division 14 of this Specification.
 - b. Mechanical Construction Work - Division 15 of this Specification not including Fire Protection Work. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Mechanical Work.
 - c. Fire Protection Work - Sections 15301, 15305, 15307, 15310, 15322 and 15323 only of Division 15 of this Specification. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Fire Protection Work.
 - d. Electrical Construction Work - Division 16 of this Specification. Contractor shall also indicate on the Bid Form the name of the firm or Contractor who will perform the Electrical Work.
 - 2. For Mechanical Construction Work (Division 15 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:
 - 3. For Fire Protection Work (Sections 15301, 15305, 15307, 15310, 15322 and 15323 only of Division 15 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:
 - 4. For Electrical Construction Work (Division 16 of this Specification), the following Owner approved subcontractors may be available to furnish a quotation for this project:
- B. Refer to Section 01110 of this Specification for description of Alternates.
- C. Refer to Section 01210 of this Specification for description of Allowances.
- D. Refer to Section 01310 of this Specification for description of Unit Prices.

1.4 SEQUENCE OR PHASING OF WORK

- A. Contractor shall sequence or phase all construction Work (refer to Drawing) to minimize interruptions and to allow Owner to maintain their business operation as

usual and with a minimal of interference from construction Work activity. Work shall be completed in each area or phase prior to starting Work in adjacent areas or phases, except as approved by Owner. Work shall be conducted in the following phases and priorities:

1. Priority No. 1 shall consist of _____
2. Priority No. 2 shall consist of _____

1.5 BUILDING PERMIT

- A. Contractor will obtain and pay for Building Permit(s) as required for all phases of Work under this Contract.

1.6 EQUIPMENT AND MATERIAL DELIVERY SCHEDULE

- A. Within 2 weeks after award of Contract, Contractor shall furnish Owner with specific information regarding various equipment and materials (indicated within this Specification and as shown on Drawings), which are in short supply or requiring long periods for delivery (refer to Section 01510 of this Specification for format to be used). This information will enable Owner to properly coordinate the Construction Progress Schedule (refer to Section 01610 of this Specification) in such manner as to keep Contractor and Owner aware of delays that may alter the progress or completion of the project.

1.7 WEEKLY WORK SUMMARY

- A. Contractor shall furnish the Owner's Designated Representative with a weekly work summary. The summary shall include a general outline of the Work accomplished for the week and the manpower distribution on the project according to classification of workmen.

1.8 OCCUPANCY AND USE OF EXISTING BUILDING

- A. Owner may occupy and use portions of the existing building during the construction and/or remodeling period. The construction and/or remodeling shall be conducted in a manner that will permit the full and uninterrupted operation of areas of the facility. In the event that Owner determines an interruption of normal operations is unavoidable, Contractor shall Work in cooperation with Owner's Designated Representative in order to keep any interruption to a minimum. If interruption of normal operations is required, it shall be assumed for bidding purposes that all such Work will be accomplished during normal working hours.
 1. Where cut-ins to existing services such as steam, condensate, water, compressed air, electric service, heat, telephone, and similar items are required, or where certain services are to be installed in any area, Contractor shall make these cut-ins or install such services only after receiving Owner's written permission and at an agreed upon time.
- B. Contractor will have available for their use the Dock Area entrance(s) at the times designated by Owner's Designated Representative for the loading and unloading of construction material and equipment. No parking on Owner's access driveways will be allowed, except in designated parking areas as indicated. Movement of materials and equipment through the existing building shall be on rubber-tired trucks or platforms furnished by Contractor. Owner's equipment shall not be used by Contractor.

1. Contractor's personnel shall use the Dock Area employee entrance(s) as designated by Owner's Designated Representative.
 2. Contractor's personnel shall visibly wear Owner's construction security badges, which will permit them to enter the existing building and construction Worksite areas only.
 3. Access to other areas will be on a limited and a security controlled basis with no meandering allowed.
- C. Contractual Work shall be conducted during the building's normal working hours (between the hours of 7 am and 5 pm), Monday through Friday of each week. If Contractor desires to perform Work at other times, then they shall make a special request to Owner at least 48 hours in advance. Owner shall have the right to grant or deny such a request.
- D. Unless prior permission is obtained from Owner, Contractor shall not interfere in any way with the normal operation of the building and shall not block for any reason the entrances or exits of the buildings, ramps, driveways or parking lots and interior egress corridors. Contractor's materials, tools, supplies or debris shall not be allowed to accumulate in corridors, passageways, loading areas, driveways or similar areas. When an entrance, ramp, drive or corridor may require work, and be made unusable for a period of time, the Contractor shall provide at least one week's notice to the Owner prior to start of work in the area. Temporary signage may be required to designate safe routes of egress.
- E. All Contractors shall limit their use of the existing building to the areas to be remodeled and areas designated by Owner. Contractor's tools, equipment and material shall be stored within the areas to be remodeled or within such other areas authorized by Owner's Designated Representative. Tools and equipment shall be secured at the end of each shift and at the end of the day. If necessary, Contractor shall provide lockable 'gang boxes' for storage.
- F. Contractor shall use suitable precautions to prevent damage to pipes, conduit, ducts and underground structures and utilities to remain. Contractor shall carefully protect from disturbance or damage all monuments and property marks until Owner's authorized agent has witnessed or otherwise referenced their locations, and shall not remove them until directed by Owner.

1.9 MEASUREMENTS

- A. Contractor shall provide the following surveying services by engaging a consulting engineering firm:
1. Contractor shall lay out baselines based on the coordinate system as shown on Drawings. They shall also include all horizontal and vertical control and additional benchmarks as needed for construction based on the existing building floor elevation as shown on Drawings.
 2. Contractor shall set permanent control markers as shown on Drawings.
 3. Contractor shall layout their Work as shown on Drawings and all other requirements of their contract.
 4. Contractor shall verify the location and dimensions of existing Work, if any, that affect their Work or to which their Work is to be fitted.
 5. Contractor shall submit to Owner's Designated Representative documentation of the surveys, including a copy of field notes of all surveys.

- B. The Prime Contractor shall layout the Work in accordance with Drawings, including all partitions and openings in partitions, floors and roofs. It is understood that all other Subcontractors involved in this project will rely on this layout in the performance of their Work. Therefore, the Prime Contractor agrees to indemnify and save harmless State of Iowa Consulting Architect/Engineer and Owner from all liability and expense arising out of or in connection with the Prime Contractor's negligent preparation of such layout.
 - 1. After the Prime Contractor has laid out their Work, all other Contractors and Subcontractors shall proceed to lay out their own Work.
 - C. Contractor shall maintain and preserve all temporary base lines and benchmarks until Owner consents to the removal of such lines and marks.
- 1.10 CHANGES TO DRAWINGS AND SPECIFICATIONS
- A. Changes to the Drawings and Specifications may be made only in accordance with AIA Document A101, latest edition.
- 1.11 SOIL BORING DATA
- A. A copy of the soils report shall be made available.
 - B. Owner shall not be held liable for Contractor's interpretation of the soils report, including soil boring logs and does not assume any liability for any conclusion Contractor may derive from the soils data and reports.
- 1.12 AS-BUILT (RECORD) DRAWINGS
- A. Contractor shall prepare and maintain accurate record drawings of all mechanical and electrical underground concealed Work and shall submit these drawings to Owner upon final acceptance of Work or upon Owner's request. Drawings shall locate all underground piping and conduit by dimensions from columns or structural grid lines and invert elevations. The same shall be done for any other concealed and inaccessible mechanical or electrical Work in the building.
 - B. Submit above as-built (record) drawings to Owner at completion of project and final acceptance of Work or upon Owner's request.
- 1.13 GENERAL CONSTRUCTION (DIVISIONS 1 THROUGH 14) PROVISIONS
- A. General Description
- 1.14 MECHANICAL CONSTRUCTION (DIVISION 15) PROVISIONS
- A. Scope Of Work:
- 1.15 FIRE PROTECTION WORK (DIVISION 15 PROVISIONS)
- A. Scope Of Work:
- 1.16 ELECTRICAL CONSTRUCTION (DIVISION 16) PROVISIONS
- A. Scope Of Work:

1.17 APPLICATION OF STANDARDS

- A. Description: The following industry and design standards apply:
1. Civil/Structural/Architectural:
 - a. AISC – American Institute of Steel Construction
 - b. State of Iowa State Building Code - 1994 UBC
 - c. ACI – American Concrete Institute
 - d. AWS – American Welding Society
 - e. ASTM – American Society for Testing and Materials
 2. Mechanical:
 - a. ASME – American Society of Mechanical Engineers
 - b. IIAR – International Institute of Ammonia Refrigeration
 - c. ASHRAE – American Society of Heating, Refrigeration, and Air Conditioning Engineers.
 - d. ARI – American Refrigeration Institute.
 - e. ANSI – American National Standards Institute.
 3. Electrical and Controls
 - a. IEEE – Institute of Electrical and Electronic Engineers
 - b. IESNA – Illuminating Engineering Society of North America
 - c. ISA – Instrument Society of America
 - d. NBS – National Bureau of Standards (U.S.)
 - e. NEC – National Electric Code
 - f. NEMA – National Electrical Manufacturers Association
 - g. NESC – National Electric Safety Code
 - h. NFPA – National Fire Protection Association
 - i. UL – Underwriter's Laboratories Inc
 - j. NECA – National Electrical Contractors Association.

1.18 SUGGESTED CONSTRUCTION SCHEDULE

- A. To be determined by the State of Iowa and Project Manager.

1.19 LIST OF DRAWING PACKAGES

- A. To be determined.

2.0 PART 2 - DESCRIPTION OF SHORT TERM WORK

2.1 SITE

- A. Grounds and Landscaping – N/A
- B. Parking Ramp

The existing upper parking deck is showing signs of overstress (overloading) and severe deterioration. To prevent any further deflection of primary beams they should be shored – just to maintain their own weight, the weight of foot traffic, and that of snow loads until it can be removed.

1. Civil/Structural/Architectural
 - a. Beams
 - 1.) Shore two cracked beams at 10 ft. elevation.
 - 2.) Maintain monitoring to verify condition of upper deck (by Owner).

- b. Base Slab
 - c. Upper Deck
 - 1.) Permanently block off upper deck from traffic.
- 2. Mechanical – N/A
- 3. Electrical – N/A
- 4. Low Voltage Systems – N/A
- C. Sidewalks and Parking – N/A
- D. Infrastructure – N/A
- E. Utilities

The existing transformer and primary switchgear situation in the Electrical Room on first level does not meet code, and preventive maintenance on dry transformers is difficult. For these reasons it is best to move the transformers and primary fused disconnects outside of the building. Note: to move this switchgear will cause a large power outage in this part of the campus to coordinate.

- 1. Civil/Structural/Architectural
 - a. Pad for transformers: Install four bases 8' by 8' each for oil-filled transformers and fused disconnects, including dike for oil containment 10' from building.
- 2. Mechanical – N/A
- 3. Electrical
 - a. Purchase and install two new 2000 KVA oil-filled transformers. The transformers in the electrical room must be moved outside and replaced with oil pad mounted.
 - b. Furnish and install two new 1200 amp 15KV bus fused disconnects.
 - c. Furnish and install #1 copper AWG 15 KV cables in 4 inch conduit from the electrical room to the new transformers, approximately 150 feet in length.
 - d. Furnish and install seven 4 inch conduits, each containing four 500 kcmil 600 volt copper cables from the new transformers to the switchgear inside the electrical room.
 - e. Furnish and install two 5 inch conduits with 500 kcmil copper 15KV cable 100 foot from new fused 15KV disconnects to existing switchgear.
- 4. Low Voltage Systems – N/A

2.2 BUILDING ENVELOPE

A. Roof

The existing roof above the second level is at its warranty age. It should be monitored and repaired as required until replacement is possible.

- 1. Civil/Structural/Architectural
 - a. Repair second level membrane roofing (maintenance allowance).
 - b. Replace southwest stair skylight double dome (4 foot diameter).
- 2. Mechanical – N/A
- 3. Electrical – N/A
- 4. Low Voltage Systems – N/A

B. Walls – N/A

C. Glass (add alternate #2) – N/A

D. Entrances

Reference 2.1, E. The existing Electrical Room does not have two exits as required by code. Addition of another exit is required. Adding one to the exterior of the building roughly opposite the existing electrical room entrance is recommended.

1. Civil/Structural/Architectural
 - a. Install egress door in east wall of mechanical transformer room - double leaf door (2'-4"-0" x 8'-0") with removable transom to 10'. Active door leaf, inactive with foot and head bolts with lockset.
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

2.3 BUILDING INTERIOR

A. Space Design

Reference 2.1, E. and 2.2, D. The electrical room is not built of fire-rated wall or ceiling assemblies.

1. Civil/Structural/Architectural
 - a. Mechanical Room; Room 174, 175 and 176 (upgrade fire rating).
 - 1.) Replace three doors and frames with fire-rated doors at interior entrances of Mechanical Room 3'-0" x 7'-0" with lockset.
 - 2.) Upgrade Mechanical Room walls to include metal studs with two layers 5/8" sheetrock.
 - 3.) Apply fireproof sealants at all pipe and duct openings to/from Boiler Mechanical Room (allowance).
 - 4.) Fur-out ceiling with metal studs and two layers of 5/8" sheetrock.
2. Mechanical
 - a. Install two-hour smoke/fire dampers at duct openings through Boiler Mechanical Room. Quantity of four at 2' x 2'.
 - b. Install additional ventilation in the electrical transformer room.
 - c. Reroute and insulate existing copper lines so they do not pass over electrical gear.
 - d. Provide and install wire and conduit to ventilation fans
 - e. Install drip pans under the water lines above the primary switchgear to guarantee water will not drop into the switchgear.
3. Electrical
 - a. Remove all chemicals from chemical storage area. Declassify the chemical storage area. Reclassify to general purpose.
4. Low Voltage Systems – N/A

B. Walls – N/A

C. Ceilings – N/A

D. Floors – N/A

E. Structure – N/A

- F. DCI Firing Range
 - 1. Civil/Structural/Architectural
 - a. Lead Abatement
 - 2. Mechanical – N/A
 - 3. Electrical – N/A
 - 4. Low Voltage Systems – N/A

2.4 BUILDING MECHANICAL

- A. Outside Utilities
 - 1. Civil/Structural/Architectural – N/A
 - 2. Mechanical
 - a. Utilize existing water (potable and fire), sanitary sewer, storm sewer, natural gas, central plant steam, and central plant chilled water services.
 - 3. Electrical
 - a. Upgrade lockable disconnects to exterior HVAC equipment and add ground fault circuit breakers (quantity of 10).
 - 4. Low Voltage Systems – N/A
- B. Water for Plumbing and Fire Protection – N/A. Leave in place. (Remodel only for occupancy changes.)
- C. Sanitary and Acid Sewers – N/A. Leave in place. (Remodel only for occupancy changes.)
- D. Storm Water – N/A
- E. Chilled Water – N/A
- F. Steam and Condensate – N/A. Leave in place. (Remodel only for occupancy changes.)
- G. Natural Gas – N/A. Leave in place. (Remodel only for occupancy changes.)
- H. HVAC

The purpose of the following HVAC work is to insure that the existing mechanical equipment, components, and systems are performing in accordance with the original design intent.

The correct supply air diffusers should be used in all areas. If not, some occupants sit directly in the supply air stream. Depending on space cooling or heating requirements, these particular occupants will feel supply air temperatures changes from 55°F. to 95°F.

As originally installed, some of the heating system equipment is not accessible for proper maintenance and testing. Improved access and relocation of some equipment is required to insure proper and peak performance.

Life expectancy of these improvements would exceed 10 years. Some of this work applies toward the “Long Term Work” solutions.

- 1. Civil/Structural/Architectural
 - a. For access to the five secondary hot water heating systems, one in the ceiling plenum of each level, remove and replace gypsum board

ceilings with suspended acoustical tile ceilings. Approximately a 10'x10' area for each.

2. Mechanical
 - a. Revise supply air diffuser and return air grille components of existing air distribution systems. To achieve proper airflow, assume 15-20% replacement of supply air diffusers and 10-15% replacement of return air grilles.
 - b. For the five secondary hot water heating systems, one in the ceiling plenum of each level, revise installation for proper operation and maintenance. Assume new control valves, pumps, and flow measuring devices are required for each system.
 - c. For existing air distribution system from Trane packaged VAV rooftop, leave in place. (Remodel only for occupancy changes.)
 - d. Testing, adjusting, & balancing (TAB) of all existing AHUs, pumps, VAV boxes, heating coils, and all other terminal units.
 - e. Based on new information and changes that may be implemented, provide "Operations and Maintenance Training/Workshop" to improve system performance and reduce occupant complaints.
3. Mechanical – N/A
4. Electrical
 - a. For the relocation of 10 pumps, modify electrical power wiring.
5. Low Voltage Systems – N/A

I. Mechanical HVAC Alternate No. 3. (See sketch SK-MECH-001.)

The purpose of this alternate is to provide a significant improvement to occupant HVAC comfort within six months. For improved winter comfort, additional heat is provided to the southeast and south glass exposure areas. For improved summer cooling, dehumidification, and airflow, additional cooling capacity is added for nearly all areas on levels 2-5. Life expectancy of these improvements would exceed 10 years. Some of this work applies toward the "Long Term Work" solutions.

1. Civil/Structural/Architectural
 - a. Provide roofing for installation of two (2) HVAC unit roof curbs and roof openings (4) for the addition of supply and return air ductwork to the southeast and south atrium areas. Include painting allowance for exposed supply and return ducts.
 - b. On the second floor, north roof, provide roofing for the installation of one (1) HVAC unit roof curb and supply air roof duct supports.
2. Mechanical
 - a. Provide new hydronic hot water, perimeter fin tube radiation system along the southeast and south atrium glass exposures. Heating performance is improved along the south side of levels 2-5. With sufficient heat along the south side, cooler supply air (from economizer cooling cycle) may be provided to interior spaces that still require cooling in winter.
 - b. Provide new packaged rooftop, outside air dehumidification unit to provide additional cooling capacity to AHUs - 3, 4, 5, 6, 7, and 8. Cooling performance is improved for many areas throughout levels 2-5.
 - c. Provide new packaged rooftop HVAC units to provide additional cooling capacity and airflow to the southeast and south atrium glass exposure areas. Cooling performance is improved along the south side of levels 2-5.

3. Electrical (with HVAC - add alternate #3)
 - a. Provide and install 100 ampere feed (three #1 AWG cables in a 2 inch conduit) from electrical room to second level roof (add alternate #3).
 - b. Provide and install a 100 ampere circuit breaker in the electrical room switchgear (add alternate #3).
 - c. Provide and install a 200 ampere circuit breaker in the electrical room switchgear (add alternate #3).
 - d. Provide and install a 200 ampere feed (three 3/0 cables in a 3 inch conduit) from the electrical room to fifth level roof (add alternate #3).
 4. Low Voltage Systems – N/A
- J. Facilities Management Control System (FMCS)
1. Civil/Structural/Architectural – N/A
 2. Mechanical
 - a. Provide Siemens DDC controls for all HVAC upgrades.
 3. Electrical – N/A
 4. Low Voltage Systems – N/A

2.5 BUILDING ELECTRICAL

- A. Main – N/A
- B. Distribution
1. Civil/Structural/Architectural
 2. Mechanical
 - a. Provide drip pans under piping in electrical room over switchgear.
 3. Electrical (See sketch ARCH-002)
 - a. Modify electrical switchgear in electrical room to permit removal of existing dry transformers.
 - b. Remove old dry transformers.
 - c. Install two additional 200 amp circuit breakers in the main electrical room on the first floor.
 - d. Restrict access to the electrical room to qualified personnel only.
 - e. Have circuit breakers on the main floors tested and replaced with larger panels. Estimated quantity of 4 (on four floors) 125 amp sub panels with 42 space panel boards added.
 - f. There are unmarked circuit breakers in the HVAC room. These must be identified and marked for personnel protection (allowance \$500).
 - g. Panel PP3 on the third floor has unmarked circuit breakers. These must be identified and marked for personnel protection.
 - h. Panel P3C has unmarked circuit breakers. These must be identified and marked for personnel protection.
 - i. Panel C3A has unmarked circuit breakers. These must be identified and marked for personnel protection.
 - j. Panel L4A has unmarked circuit breakers. These must be identified and marked for personnel protection.
 - k. Fifth floor electrical panel has unmarked circuit breakers. These must be identified and marked for personnel protection.
 - l. Add one additional lighting panel on each floor (five total).

- m. Remove and reinstall panel 5-PB-1. Panel 5-PB-1 electrical panel is installed too high for use per the National Electrical Code, 1972 and later versions
- n. Install two additional 400 amp busways through all floors of the building for additional computers.

4. Low Voltage Systems – N/A

C. Lighting – N/A

D. Phone – N/A

E. Public Address System – N/A

F. Low Voltage Systems – N/A

3.0 PART 3 - DESCRIPTION OF LONG TERM WORK

3.1 SITE

A. Grounds and Landscaping

The Wallace Building design does not address today's safety concerns. The building is a public building, and because it houses tenants from several departments, could be vulnerable to disturbances. Public access must be maintained; however, some modifications can be made to restrict vehicle approaches to the building.

- 1. Civil/Structural/Architectural
 - a. Provide and install planters and decorative barriers to improve exterior building security. (Six planters, triangular shaped.) See sketch SK-ARCH-001.
- 2. Mechanical
 - a. Add two 3/4" hose bibs 100' from building to provide watering for planters. Provide piping and valves for winter drainage.
- 3. Electrical
 - a. Add eighteen light fixtures located in the six planters.
- 4. Low Voltage Systems – N/A

B. Parking Ramp

There are signs of severe deterioration to the topping slab covering the precast double tees. The precast double tees and the cast-in-place beams supporting them present a critical structural problem. Crack patterns within these members appear to be indicative of applied load(s) beyond the design limit. These flexural cracks, coupled with water intrusion from openings through the topping, are allowing the reinforcing steel to rust and expand, accelerating the deterioration of the structural elements. The structure is beyond repair and needs to be removed.

The slab-on-grade has settled and/or heaved in many areas. The sidewalk along the south side of the lower level has also shifted. These conditions present a hazard to pedestrian traffic. Within the parking slab some of the differential movement is beyond 2 ½ inches. The paving needs to be replaced.

Storm water drainage into and within the lower level is poor. The vehicle entrance off Des Moines needs to be modified to prevent street drainage out of the ramp and should be redesigned to provide better security.

- 1. Civil/Structural/Architectural (See sketch SK-ARCH-002)
 - a. Demolish entire upper level, including most of beams and columns.

- b. Remove lower level pavements, over-excavate, and install 24" of clean, granular, compacted backfill, and replace pavements.
- c. Provide and install painted striping as required.
- d. Add elevated walkway from 9th Street to rear of building at Auditorium Lobby.
- e. Add new stairs and landing at second level off of exit door on north wall near Grid G/11.
- f. Demolish and install new parking entrance from Des Moines (to prevent storm water flow into parking area).
- g. Remove and replace parking retaining walls on the north and east sides and extend 40 inches above high grade.
- h. See Building Envelope, Section 3.2 for modifications to previous DCI Lab entrances.
- i. Furnish and install 12 concrete light post foundations and bases 2 feet in diameter and 6 feet in total length buried 4 feet in ground.
- j. Add bases for card reader and gate.
- 2. Mechanical
 - a. Add trench drain with 6" piping from lower court area to basin. (Estimated 75 feet in length)
 - b. Demolish two existing catch basins.
 - c. Add four new catch basins with 6" piping and connection to existing 8" main. (Average length to utility tie of 50'.)
- 3. Electrical
 - a. Furnish and install lighting to parking ramp - 12 classic style aluminum light posts with metal halide lamps.
- 4. Low Voltage Systems
 - a. Furnish and install a card reader and electrically operated gate at entrance to parking lot, and two 1-inch conduit including two single pair cables from card reader to communications room, approximately 80 feet in length.

C. Sidewalks and Parking

Since the new parking ramp was built on the west side of Pennsylvania, across from the building, most personnel from the building park in this ramp. They approach the building from the intersection of Des Moines and Pennsylvania, crossing through shrubbery between the sidewalk along Penn and the dock area. They enter the building through the loading dock doors. This entrance was never intended to be utilized as a primary entrance. For this and other reasons, an additional employee entrance is needed.

- 1. Civil/Structural/Architectural
 - a. At the intersection of Des Moines and Pennsylvania, add ramp off sidewalk to landing with new employee double door entrance (6' by 7') at NW corner of building. See sketch SK-ARCH-003. (Previous Metrology area.)
 - b. Remove and replace dock area paving with 8" concrete.
 - c. Add double door and stairs for entrance from Pennsylvania Ave.
- 2. Mechanical – N/A
- 3. Electrical
 - a. Add six 250-watt metal halide lighting fixtures at new personnel entrances and dock.
- 4. Low Voltage Systems – N/A

D. Utilities

Mechanical and electrical utilities provide the necessary resources and energy for the operation of the building systems and comfort of the occupants.

1. Civil/Structural/Architectural – N/A
2. Mechanical – Use existing main services for:
 - a. Potable Water – for plumbing systems.
 - b. Fire Protection Water – for fire protection sprinkler systems.
 - c. Sanitary sewer – as separated from the storm sewer.
 - d. Storm sewer – as separated from sanitary sewer.
 - e. Natural gas – firm supply meter for potable hot water and hydronic hot water heating boiler.
 - f. Chilled water supply from and return to Capitol Central Plant – for summer cooling and dehumidification.
 - g. High-pressure steam supply from and low-pressure condensate return to Capitol Central Plant – for winter heating.
3. Electrical -- Use existing services
 - a. Provide and install underground feed four 4 inch conduits across lower level parking ramp from electrical room into building below first floor to new electrical core south of K/13 in east wing.
 - b. High voltage feed to the building to be revised outside the scope of this document.
 - c. Emergency generation for this building to be revised outside the scope of this study.
4. Low Voltage Systems – N/A

3.2 BUILDING ENVELOPE

A. Roof

Greenhouse Roof – This space was designed as a plant greenhouse. It has never met this function. The space is not wide enough to allow direct sunlight to reach plant tables. The space is cool or cold, depending on the season. The roof system, of curtain wall type framing and glass, leaks. The greenhouse roof needs to be replaced with a more conventional roof.

Main Roofs – The built-up roof above the fifth level has aged to the point of requiring replacement. The membrane roof above the second level (North and West side of the building) has reached the end of its design life. The entire roofing system needs replacement or excessive maintenance will be required.

1. Civil/Structural/Architectural
 - a. Greenhouse (West Wing - South Side): Remove the existing glass roof system; install framing, insulated infill, and provide a metal standing seam roof.
 - b. Remove and replace existing roof (at third and sixth levels) with fully-adhered membrane roof. Demolish and install new roof insulation system.
 - c. Repair roofing areas at HVAC equipment to be removed on second level roof.
2. Mechanical
 - a. Revise roof drainage system for new roofing, remodeling 20 existing drains.
 - b. For installation of large, new air handling units: add four new roof drains with 6" piping (50' allowance each).

- c. Remove selected rooftop exhaust fans and small package units; estimated quantity 15.
- 3. Electrical
 - a. Remove electrical feeds to demolish mechanical equipment back to source.
- 4. Low Voltage Systems – N/A

B. Walls

The existing exterior walls are covered with a brick veneer. The brick consists of soft, coarse porous clay that has been wire cut and is finished with a baked-on white glaze. The brick units are oversized, 12" by 12" by 4" deep formed with four open vertical cores. The brick veneer is supported on relieving angles at 14-feet on-center vertically with the angles connected to the edge of the building perimeter slabs. Brick expansion joints are located at the building grids, 30-feet on-center along the walls square to the building and at 42-feet plus along diagonal walls.

The brick has expanded and crushed the joint filler within the expansion joints. Areas of mortar coursing have cracked, split or fallen out, providing openings for water and wind to enter the cavity behind the brick. The brick glazing has also lost some or all of its waterproofing properties. Areas of brick absorb and/or hold water after any significant precipitation. This is visible on the exterior of the building and results in an unsightly appearance. On the interior of the building there have been complaints about water intrusion (some from areas of absorbed water, others from straight intrusion of water.

The exterior walls are insulated with 2-inches of rigid foamed insulation board (R-10) when placed behind masonry units on the interior. At areas to the inside finished with steel stud and gyp board the wall is insulated with a 3-inch fiberglass batt (R-11). Neither of these systems now provides the current recommended thermal resistance for exterior walls. No vapor/water barrier exists between the brick and the inside surface and there aren't any drainage weep holes above each ledger support.

Windows only exist on the southeast and south facades with a small area of glass on the west side aligned with the existing break rooms on third, fourth and fifth levels. This glass is reflective, with the southeast and south expanses of glass providing a mirror to reflect the Capitol Building. The glass on the southeast and south sides aligns with the existing building atrium spaces.

The best long term solution to the building envelope problems is replacement with architectural precast concrete.

- 1. Civil/Structural/Architectural
 - a. Remove all brick and exterior curtain walls.
 - b. Install new architectural precast spandrel panels (±63,800 square feet).
 - c. Provide new exterior curtain wall systems.
 - d. Alternate to items a-c (if option is to save most of existing brick veneer):
 - 1.) Clean, tuckpoint, seal, caulk, and coat building exterior with buff color to match existing Pennsylvania Avenue parking ramp. (62,000 square feet)
 - 2.) Provide and install spandrel panels at fourth level across atrium walls. (352 linear feet by 6 foot high)
 - 3.) Maintain the existing reflective appearance of the building with new reflective glass.
 - 4.) Repair wall adjacent to second level parking deck with infill brick.

- e. Remove interior masonry or existing metal stud system at 100% of building perimeter. Replace with insulated metal stud gypboard furring.
- f. Remove mechanical screen wall on north side. At levels three and four, fill in openings with wall and/or window materials.
- g. Dock Area - Remove existing exterior curtain wall and install new 8 inch CMU wall at dock entry area.
- 2. Mechanical
 - a. In mechanical rooms at levels three and four of the east building half, remove outside air intake and return/relief louvers.
 - b. In the NW exterior dock area ceiling, remove outside air intake grille, seal and insulate.
- 3. Electrical – N/A
- 4. Low Voltage Systems – N/A

C. Entrances

As the existing parking ramp upper level is structurally unsound (and under the primary option will be removed) the entrances along Grid 9 need to be removed and blocked in.

The existing building curtain wall across the back of the dock area does not provide the necessary thermal barrier and infiltration barrier necessary to keep temperatures stabilized at this level on the north side of the building. New, better-insulated doors will also be installed.

At the northwest corner of the building a new personnel entrance will be installed.

- 1. Civil/Structural/Architectural
 - a. Parking Ramp Area - Upper Level:
 - 1.) Install stairs to grade.
 - 2.) Remove overhead door south of C/9. Infill exterior wall with brick.
 - b. Dock Area; provide and install double mandors (6' x 7' opening) at dock area.
 - c. Provide and install new employee double door entrance (6' by 7') at NW corner of building (NW corner of old Metrology lab area).
 - d. Provide and install employee entrance to Penn.
- 2. Mechanical
 - a. Refer to Section 3.3.E.2 (Metrology Lab Area Conversion)
- 3. Electrical
 - a. Remove wall pack lighting fixture at existing ramp doors south of B/9 and C/9.
 - b. Provide and install 110 volt power to two new sets of double doors at NW corner of building.
 - c. Provide and install 110 volt power to two overhead doors.
- 4. Low Voltage Systems
 - a. Provide and install card reader at dock area door.
 - b. Add a card reader at two new double door entrances at NW corner of building.

3.3 BUILDING INTERIOR

A. Lab Area to Offices

The existing first and second level offices will have all interior non-load-bearing walls removed creating an open office area suitable for cubicle arrangements. All

finishes from ceiling to floor will be removed and replaced. There will be minor modifications required by mechanical and electrical functions. Existing floor toppings will be removed and replaced, while including a system of electrical floor ducts.

1. Civil/Structural/Architectural
 - a. Remove all non-load-bearing lab area walls for new office area.
 - b. Remove existing floor covering and dispose of in appropriate land fill (flooring has less than 5% asbestos and is not friable).
 - c. Remove all existing floor finishes in existing lab areas.
 - d. Remove existing lab area ceilings.
 - e. Install suspended acoustical ceilings.
 - f. Demolish existing concrete topping, install floor ducting system for electrical and communications, and reinstall floor (53,000 square feet).
 - g. Provide and install carpet squares.
 - h. Lab Equipment.
 - 1.) Remove all existing counters, shelves, etc. from first and second floor lab areas.
2. Mechanical
 - a. Cap underground lab plumbing services at the floor line.
 - 1.) Sanitary sewer.
 - 2.) Acid resisting waste.
 - b. Remove above ground lab piping services in occupied spaces back to main piping in ceiling plenum:
 - 1.) Potable hot and cold water.
 - 2.) Lab tempered hot supply and return water.
 - 3.) Lab sanitary waste and vent.
 - 4.) Lab acid resistant waste and vent.
 - c. Remove all above ground lab piping services from space, through ceiling plenums, and back to source.
 - 1.) Natural gas back to main piping connection near gas meter.
 - 2.) Compressed air back to air compressor. If not used, disconnect and remove equipment.
 - 3.) Distilled water back to generation equipment. If not used, disconnect and remove equipment.
 - 4.) Vacuum back to pumps and tank. If not used, disconnect and remove equipment.
 - 5.) Liquid soap. Remove equipment.
 - 6.) High-pressure steam in its entirety. Remove boiler.
 - d. Remove all lab exhaust hoods, exhaust ductwork, exhaust fans, and dedicated lab outside air supply air units. Patch and insulate all openings through walls and roof.
 - e. Remove all supply air diffusers and return air grilles in ceiling system. Remove all supply air ductwork from and return air ductwork to existing air handling units.
3. Electrical
 - a. Remove all electrical and distribution back to primary switchgear.
 - b. Furnish and install general office high efficiency fluorescent lighting, providing 50 foot-candles in all areas, with dimming ballasts in conference rooms.
 - c. Install under floor ducts and conduit.
 - d. Install 110-volt receptacles in new walls.
 - e. Install under floor receptacles in open office spaces.

4. Low Voltage Systems
 - a. Furnish and install fire alarm sensors and alarms in Lab Area.

B. First and Second Floor Existing Office Areas

To open up all space for office functions, remove the separation walls between the existing office areas and the existing lab areas.

1. Civil/Structural/Architectural
 - a. Remove all separation walls (from labs).
 - b. Demolish all tenant spaces; ducts, ceilings, lights, etc.
 - c. Provide and install new suspended ceiling.
 - d. Provide and install carpet squares.
2. Mechanical
 - a. Refer to Section 3.4.J (Building Mechanical HVAC).
3. Electrical
 - a. Refer to Section 3.5.B & C.
4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.

C. Restrooms

None of the restrooms within the building comply with accessibility requirements. In most cases entry hallways and entry doors need to be reconfigured to allow access. The necessary numbers of fixture type, shape, and accessibility in all restrooms will be upgraded to meet ADA. Hardware and restroom accessories will be upgraded to comply. The occupancy change of the building from lab to office will require addition fixtures on first and second levels. The existing fixture counts on third, fourth, and fifth levels are insufficient. It is recommended that an additional restroom area be located on each level.

The existing fixture-to-plumbing connections require modification. All fixtures should be upgraded with infrared sensing valves and faucets. Piping isolation valves should be added at each level to simplify repairs. Restroom exhaust will be modified.

1. Civil/Structural/Architectural
 - a. First floor – Remodel existing to comply with Americans with Disabilities Act (ADA) requirements, and increase restroom size (# of fixtures = 10 water closets, 2 urinals, 10 lavatories).
 - b. Second floor – Add restrooms off lobby outside Auditorium to comply with ADA (# of fixtures = 3 water closets, 1 urinal, 3 lavatories). Make sure restrooms for auditorium can be isolated from rest of building.
 - c. Second floor – Remodel existing to ADA, and increase restroom size (# of fixtures = 14 water closets, 3 urinals, 14 lavatories).
 - d. Third floor – Remodel existing to ADA; add new restrooms above existing north of grid N (# of fixtures = 7 water closets, 2 urinals, 6 lavatories).
 - e. Fourth floor – Remodel existing to ADA; add new restrooms above existing north of grid N (# of fixtures = 7 water closets, 2 urinals, 6 lavatories).
 - f. Fifth floor – Remodel existing to ADA; add new restrooms above existing north of grid N (# of fixtures = 7 water closets, 2 urinals, 6 lavatories).
 - g. Add/change hardware and accessories to comply with ADA - all restrooms.

2. Mechanical
 - a. Replace all existing plumbing fixtures and provide new plumbing fixtures as required, including infrared sensing valves and faucets.
 - b. For all fixtures, provide potable water and sanitary sewer distribution systems. Include new domestic water isolation valves.
 - c. Provide increased exhaust ventilation as required.
3. Electrical
 - a. Provide and install two electric hand dryers per restroom.
 - b. Provide and install new lighting with motion detection in all restrooms.
 - c. Provide and install two GFCI receptacles in each of the restrooms.
 - d. Provide and install conduit and wire to electrical hand dryers and GFCIs.
 - e. Provide power to infrared sensors.
4. Low Voltage Systems – N/A

D. Janitor's Closets

One additional janitor's closet should be added on second level adjacent to the restroom core area.

1. Civil/Structural/Architectural
 - a. Provide one janitor closet per floor adjacent to core restrooms.
2. Mechanical
 - a. Provide and install one janitor sink with cold/hot water piping and floor drain per janitor closet.
 - b. Add increased exhaust ventilation.
3. Electrical
 - a. Provide and install one 4' surface-mount fluorescent fixture for each closet.
 - b. Provide and install GFCI receptacle.
4. Low Voltage Systems – N/A

E. Utility Chases

The current electrical shafts in the building concentrate electrical services in one location, limiting the power available to offices and computer usage, and overloading the floor ducting system. Mechanical system upgrades require additional access routes for utilities.

For these and other reasons, new fire-rated vertical shafts for mechanical and electrical systems will be added.

1. Civil/Structural/Architectural
 - a. Provide two-hour rated 8" CMU core-filled walls. (See Mechanical a and b below for size and location.)
 - b. Provide five 90-minute rated doors for new electrical chases, one per level.
 - c. Provide new floor and shaft openings as required for ducts and chases.
 - d. Fire stop around all new penetrations.
2. Mechanical
 - a. Add Mechanical Chase (approx. 16'x12') NW of M-9, five floors. Packaged, custom penthouse style air handling unit (AHU) on roof above has a weight of approximately 80,000 lbs. and covers an area of 20 ft. x 60 ft.

- b. Add Mechanical Chase (approx. 16'x12') NW of H-9, two floors. Packaged, custom penthouse style air handling unit (AHU) on roof above has a weight of approximately 80,000 lbs. and covers an area of 20 ft. x 60 ft.
 - 3. Electrical
 - a. Add Electrical Room/Chase (8'x10') NW of K-13, five floors.
 - b. Provide and install fluorescent fixture with battery backup and GFCI receptacle on each floor in chase.
 - c. Provide and install 75 kva transformer plus 400 amp panelboard on each floor, in chase.
 - 4. Low Voltage Systems
 - a. Provide and install one new 500 pair telecommunications cable (combination copper and fiber) routed from main telephone terminal in new electrical shaft and install terminal cabinets at each floor.
- F. Metrology Lab Area Conversion

Conversion of the Metrology Lab area is needed to provide an employee entrance to the building, as well as additional office space.

 - 1. Civil/Structural/Architectural - sketch SK-ARCH-003
 - a. Add corridor from new entry into building – routed around existing truck bay. Corridor interior along grid 1 will be “ramped” for ADA access.
 - b. Add landing and ramp to interior of truck dock – south end.
 - c. Elevate existing restrooms to first floor elevation.
 - d. Infill balance of existing floor.
 - e. Convert space south of K.4 and north of M to general office area on first level. Raise floor to existing floor elevation.
 - f. Provide access and service walkways to existing AHU-09.
 - g. Provide and install suspended ceilings in hallway and restroom areas.
 - h. Demolish overhead rail.
 - 2. Mechanical
 - a. Reuse AHU-9 and upgrade controls as required for remodeled spaces.
 - b. Remove existing variable air volume (VAV) boxes and downstream air distribution. Provide new fan-powered variable air volume boxes with hot water coils (FPVAV/HW).
 - c. Remove existing plumbing fixtures.
 - d. Provide and install new ADA plumbing fixtures and water and waste piping connections to existing services.
 - e. Provide exhaust ventilation as required.
 - 3. Electrical
 - a. Remove existing lighting.
 - b. Add three (3) exterior lights.
 - c. Provide and install new fluorescent lighting at 50 foot-candles per square foot.
 - d. Provide and install wall receptacles on 12 foot centers.
 - e. Provide and install two (2) GFCI receptacles in each of the two (2) restrooms.
 - f. Provide and install power to three (3) exterior doors.
 - g. Relocate Transformer D-2, Power Panel PP-2, and Distribution Panel DP-2 to east wall, north, approximately 50' away.

- h. Furnish and install new conduits and wire from electric room to Transformer D-2, Power Panel PP2, and Distribution Panel DP-2.
- 4. Low Voltage Systems
 - a. Provide and install card access.

G. Existing Dock Area

Air infiltration from the Dock Entry into the first level north corridors is a problem. Addition of a wall will create a vestibule-type area and mitigate the infiltration. Mechanical heating and cooling systems will be installed to temper the air. This will improve indoor comfort from this area up through the fifth floor elevator lobby. Currently, excessive winter and summer infiltration of outside air causes objectionable space temperature and humidity conditions in these areas.

- 1. Civil/Structural/Architectural
 - a. Provide and install new interior wall 24 linear foot (metal stud gypboard).
 - b. Remove and replace suspended acoustical ceiling.
 - c. Provide and install two new interior door sets with 6' x 7' opening each.
- 2. Mechanical
 - a. Add two (2) hot water cabinet unit heaters with piping and controls.
 - b. Add one (1) fan-powered variable air volume box with piping and controls.
- 3. Electrical
 - a. Provide and install ¾" conduit 3 #10 AWG wires to power the unit heaters. (Estimate 150 feet)
 - b. Provide and install ¾" conduit 3 #10 AWG wires to power to the VAV's.
 - c. Provide and install six (6) three tube fluorescent high efficiency fixtures.
 - d. Provide and install two (2) 250 watt metal halide wallpack exterior fixtures.
 - e. Provide and install ¾" conduit 3 #10 AWG wires to power exterior door.
- 4. Low Voltage Systems – N/A

H. South Atrium (in office areas, levels two through five of west building half)

The existing atrium spaces do not meet the fire and smoke control requirements of current codes. Current code restricts the height of atriums to two floors. The openness of these spaces also complicates ventilation control and makes sound isolation between floors nearly impossible. Within the existing 'Terrarium' the plants, earth, fishpond and reptiles all contribute to problems with air quality and moisture load in the building. The fountain within the pond creates too much noise when in operation. The atrium spaces take up large amounts of area that could be utilized for office functions.

During extreme winter conditions, heating is not sufficient to prevent cold space conditions and objectionable downdrafts. During extreme summer conditions, cooling and airflow capacity is not sufficient to maintain desirable space temperature and humidity conditions.

The atrium spaces will be divided into two story spaces that will provide additional usable space while still maintaining an open public space for building entry.

The atrium edges are open, allowing the free movement of air and noise. In an effort to restrict both of these, open balcony edges on third and fifth floor will have curtain-wall type barriers installed.

1. Civil/Structural/Architectural
 - a. Frame in third, fourth, fifth floor levels (extend offices to exterior wall)
 - b. Add under-floor electrical ducts at second level in new concrete floor. See sketch SK-ARCH-004
 2. Mechanical
 - a. Refer to Section 3.4.J (Building Mechanical HVAC).
 3. Electrical
 - a. Refer to Section 3.5.B & C.
 4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.
- I. Terrarium Atrium (at plants and pond)
1. Civil/Structural/Architectural
 - a. Second Level (new second level conference room). See sketch SK-ARCH-005.
 - 1.) Add retaining wall on first floor across Grid P between Grids 9 and 12.
 - 2.) Infill to second level (± 664 cubic yards).
 - 3.) Add under-floor electrical ducts in new concrete floor (approximately 1,920 square feet).
 - 4.) Add four doors and one wall along Grid P at lobby to create new two-story conference room.
 - 5.) Add new concrete floor to third level.
 - b. Fourth Level Conference Room
 - 1.) Frame in new fourth level for two (2) new conference rooms.
 - 2.) Add under-floor electrical ducts in new concrete floor.
 - 3.) Add four doors and one wall along Grid P to create two-story conference room.
 - 4.) Add new concrete floor to fifth level.
 2. Mechanical
 - a. Refer to Section 3.4.J (Building Mechanical HVAC).
 3. Electrical
 - a. Refer to Section 3.5.B and C.
 4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.
- J. Southeast Atrium (lobby and office areas, levels two through five of east building half)
1. Civil/Structural/Architectural
 - a. Infill third level triangle northwest of Grid P.12, and add wall across Grid P above new conference room. See sketch SK-ARCH-006
 - b. Infill all fourth level openings up to exterior wall. See sketch SK-ARCH-007
 - c. Atrium floor edges
 - 1.) Edge balcony, infill curtain wall above railing at third and fifth floor levels.
 - d. Lab Equipment
 - 1.) Remove all existing counters, shelves, etc. from first and second floor lab areas.

2. Mechanical
 - a. Refer to Section 3.4.J (Building Mechanical HVAC).
 - b. Remove all lab vent hoods, including exhaust duct, fans, and drains (assume hazardous demolition and disposal).
3. Electrical
 - a. Refer to Section 3.5.B & C.
 - b. Remove old wiring in under-floor ducts to make room for new circuit wiring (allowance \$10k).
4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.

K. Third, Fourth, Fifth Floors

Most of the third, fourth, and fifth levels are open office design. In order to bring these spaces up to electrical and mechanical standards, ceilings and floors need to be removed and replaced. Third and fourth level mechanical and storage areas on the north side of the east wing may be removed and converted to offices. Glass could then be added along the north wall on these floors.

1. Civil/Structural/Architectural (see sketches SK-ARCH-008 and SK-ARCH-009)
 - a. Remove and replace selected auxiliary separation walls, all ceiling, and carpet.
 - b. Recover majority of AHU room space on third and fourth floors for new office use.
 - c. Provide and install suspended ceiling.
 - d. Provide and install carpet squares.
2. Mechanical
 - a. Refer to Section 3.4.J (Building Mechanical HVAC).
3. Electrical
 - a. Move Panel 5-PB-1 electrical panel to another wall near existing location.
 - b. Refer to Section 3.5.B & C.
 - c. Remove old wiring in under-floor ducts to make room for new circuit wiring.
4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.

L. Elevators

The existing elevators are all original equipment, 26 years old or older, and are showing their age. Cab operation is shaky, and stops end with a distinct bounce of the cable system. They do not meet current ADA requirements.

All elevator systems need to be replaced.

1. Civil/Structural/Architectural
 - a. Remove existing elevator cabs, rails, runners, controls and cable systems (four separate elevators).
 - b. Provide and install new ADA compliant elevators (four separate elevators).
2. Mechanical – N/A
3. Electrical
 - a. Refer to Section 3.5.B & C.
 - b. Provide and install power as required to elevators.
4. Low Voltage Systems
 - a. Refer to Section 3.5 D - F.

M. Stairs and Railings

Stair railings do not meet current code.

1. Civil/Structural/Architectural
 - a. Modify existing railings to meet code.
 - 1.) Remove and replace stair center handrails in three stairwells.
 - 2.) Extend tops and bottoms of railings at landings.
 - b. Note needs to be taken that riser/tread dimensions do not meet code. However, at this time it is recommended that a variance be obtained for this.
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

N. Main Lobby Vestibule

Add walls to provide airlock and privacy to create separate auditorium lobby. This will improve building HVAC, reducing excessive outside air infiltration and carbon monoxide (CO) levels.

1. Civil/Structural/Architectural (see sketch SK-ARCH-010)
 - a. Add 22' long glazed framing system between grids L/12.56 to M.13 with four 3' x 7' doors.
 - b. Add 30' long glazed framing system between grids M/13 to M/14.
2. Mechanical
 - a. Revise supply and return air distribution.
3. Electrical – N/A
4. Low Voltage Systems – N/A

O. Tactile (Directional and Informational) Signage

1. Civil/Structural/Architectural
 - a. Replace emergency exiting plans (estimate 50 11"x17" placards).
 - b. Install stair level signage at each door, each floor, and all stairs.
 - c. Install room, office, and workstation signage as required.
2. Mechanical – N/A
3. Electrical
 - a. Upgrade all existing exit signs to illuminated exit signage.
4. Low Voltage Systems – N/A

3.4 BUILDING MECHANICAL

A. Fire Protection Sprinkler System

1. Civil/Structural/Architectural – N/A
2. Mechanical
 - a. For new space layout and ceiling systems; remove, relocate and add sprinkler heads as required.
 - b. Utilize existing piping system. Include new isolation valves.
3. Electrical – N/A
4. Low Voltage Systems
 - a. Refer to Section 3.5 F.

B. HVAC (See Sketch SK-MECH-001)

The following heating, ventilating, and air conditioning systems (HVAC) recommendations are based on addressing all noted deficiencies including:

- ***Areas too hot in summer, but some also too hot in winter.***
- ***Areas too cold in winter, but some also too cold in summer.***
- ***Poor air movement occurs in some areas, while excessive air movement occurs in other areas.***
- ***Poor indoor air quality (IAQ), both real and perceived.***
- ***Excessive sound levels from HVAC systems.***

Implementation of these items will provide mechanical systems consistent with current building codes; ASHRAE standards for IAQ and energy efficiency; and the Iowa Sustainable Design Guide.

1. Civil/Structural/Architectural
 - a. Provide fire stopping around penetrations for mechanical equipment.
 - b. Install AHU roof curbs (provided by AHU manufacturer).
 - c. Remove louvers on north wall and refill with brick.
 - d. Remove all or portion of (at least 10' x 10') of existing ceiling/floor in rooms 1110, 211, 316, 416, and 516.
2. Mechanical
 - a. Provide new packaged, custom penthouse style air handling unit (AHU) to serve upper levels three, four, and five.
 - 1.) This unit will replace AHUs 4, 5, 6, 7, and 8.
 - 2.) Provide and install new supply and return ductwork to each level served.
 - a) Combination fire/smoke dampers at all shaft penetrations.
 - b) Connect with existing medium pressure supply air duct and low pressure return air duct.
 - b. Provide new packaged, custom penthouse style air handling unit (AHU) to serve lower levels one and two.
 - 1.) This unit replaces AHUs 1, 2, 3, and the rooftop unit (RU-1).
 - 2.) Provide and install new supply and return ductwork to each level served.
 - a) Combination fire/smoke dampers at all shaft penetrations.
 - b) Connect with new medium pressure supply air duct and low pressure return air duct.
 - c. Provide new series type, fan-powered variable air volume boxes with hot water coils (FPVAV/HW) to replace existing VAV boxes. Approximate quantity will be 200.
 - 1.) Remove existing ductwork downstream of VAV boxes.
 - 2.) Provide and install new ductwork downstream of VAV boxes.
 - 3.) Remove existing supply air diffusers and return air grilles.
 - 4.) Provide and install new air grilles and air diffusers.
3. Electrical
 - a. Provide and install circuit breakers, 4 inch conduit, and 350 KC mil (3 each) wire to two (2) 150 HP supply air fan and two (2) 60 HP return air fan. (Approximately 250 linear feet)

- b. Provide and install circuit panels, conduit, and wire to VAV boxes. Approximate quantity will be 200, each with a 1 HP motor, ¾ inch conduit and 3 #10 AWG wires.
4. Low Voltage Systems – N/A

C. Facilities Management Control System (FMCS)

The FMCS is the “brain” that provides:

- ***Operational controls, thermostats and humidistats, to sense and control acceptable space conditions.***
- ***Energy efficiency in the utilization of heating and cooling energy sources.***
- ***A means of recording and documenting critical data.***

1. Civil/Structural/Architectural – N/A
2. Mechanical
 - a. Provide Siemens DDC controls for all HVAC upgrades.
 - b. Replace all pneumatic controls. Remove pneumatic air piping and compressors.
3. Electrical – N/A
4. Low Voltage Systems – N/A

D. Testing, Adjusting and Balancing (TAB)

These services provide:

- ***Measurement and balancing of hydronic hot water flows (gpm) for heating pumps, and chilled water flows (gpm) for cooling pumps.***
- ***Measurement and balancing of airflows for air handling units, fans, VAV boxes, supply air diffusers, and return grilles.***

1. Civil/Structural/Architectural – N/A
2. Mechanical
 - a. Test and balance all hydronic and airside systems per AABC or NEBB guidelines.
3. Electrical – N/A
4. Low Voltage Systems – N/A

E. Commissioning (Cx) – NOT included at this time.

A process and means of Owner verification that strives to insure that the mechanical and related systems are operating in accordance with the original design intent. With reference to the ASHRAE guidelines, Cx is a process that may include several phases of project development, design, construction, and post-construction services. Development of a “Cx Scope” is required before a potential cost may be estimated.

1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems – N/A

3.5 BUILDING ELECTRICAL

A. Main

The existing switchgear is original equipment, 30 years old or older, and is showing its age. Circuit breakers have not been checked or maintained since original installation, and are not reliable for operation in case of problems. The space

between equipment and the available egresses out of the room do not meet the National Electrical Code requirements.

1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical
 - a. Provide and install two (2) electrical switchgears in existing electrical room - 3,000 amp each.
4. Low Voltage Systems
 - a. Provide and install power monitoring system.

B. Distribution

The existing electrical distribution is concentrated in one location on all floors. This results in the limitation of cubicle and computer power requirements due to space availability. By feeding all the floors from two locations, this frees up more under floor troughs for power distribution.

1. Civil/Structural/Architectural
 - a. Tie existing underfloor duct to new electrical chase at two (2) locations on each floor (estimate 50 linear feet of floor cap removal and re-floor – 2 ½" x 6").
2. Mechanical – N/A
3. Electrical
 - a. Provide and install three (2) new 400 amp circuits (3 count 500KC mil in 4" conduit each) through new electrical chase (250' each).
 - b. Provide and install two (2) new 400 amp power distribution panels on each floor (42 circuit each).
 - c. Provide and install three (2) 400 amp circuit breakers.
 - d. Install 110-volt receptacles in new walls.
 - e. Install under floor receptacles in open office spaces.
4. Low Voltage Systems – N/A

C. Lighting

The existing electrical lighting on the floors is manually operated, and does not automatically turn off areas when people are not present. The conference rooms also need to have methods for dimming lighting to allow presentations and visual displays or computer screens to be viewed without impacting people's vision. By adding dimming ballasts for lighting and lighting contactors to automatically turn off sections of lighting, significant energy savings can result, and improvements in occupant comfort will occur.

1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical
 - a. Per floor, add eight lighting contactors with timers.
 - b. Furnish and install general office high efficiency fluorescent lighting, providing 50 foot-candles in all areas, with dimming ballasts in conference rooms.
4. Low Voltage Systems – N/A

D. Phone

The existing phone system distribution is concentrated in one location on all floors. Although currently adequate, space in the floor ducts is limited. This results in cubicle and office phone requirements being hampered due to space availability. Feeding all the floors from two locations will free up more under floor troughs for

phone distribution. Adding fiber throughout the building will allow faster computer communications and provide excellent service to building tenants well into the 21st century.

1. Civil/Structural/Architectural (see section 3.3 D)
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems
 - a. Provide and install phone cable and fiber to every cubical and office area.
 - b. Provide and install phone cable and fiber to conference rooms.

E. Public Address System (PA)

The existing PA system is rarely used, except for emergency. Therefore, if the building is to be remodeled, this system must be put back to handle emergency notifications.

1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems
 - a. Provide and install PA system to each floor.

F. Low Voltage Systems

The existing low voltage system is rarely used, except for off-hours use. Therefore, if the building is to be remodeled, this system must be put back to handle off hours use and possible higher security considerations.

1. Civil/Structural/Architectural – N/A
2. Mechanical – N/A
3. Electrical – N/A
4. Low Voltage Systems
 - a. Furnish and install fire alarm sensors and alarms.
 - b. Furnish and install CAT 6e and fiber cables to each cubicle area, office, and two in each conference room.
 - c. Furnish and install two cables to each outside door for security access and alarm.
 - d. Furnish and install access card reader and magnetic switch on each outside door.
 - e. Furnish and install electric locks on each outside door.

4.0 PART 4 - NOT APPLICABLE

END OF SECTION